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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,501	01/25/2002	Leon Chia-Liang Lin	01 P 15965US (INFI 2320)	4345
29393	7590	11/14/2005		
			EXAMINER	
			WONG, WARNER	
			ART UNIT	PAPER NUMBER
			2668	

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/057,501	LIN, LEON CHIA-LIANG
	Examiner Warner Wong	Art Unit 2668

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 January 2002.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-3 and 6-8 is/are rejected.
- 7) Claim(s) 4,5 and 9-19 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 January 2002 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	6) <input type="checkbox"/> Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

2. The disclosure is objected to because of the following informalities: At the top of page 7, there exist a white out section which covers portions of the first 3 sentences.

Appropriate correction is required.

Claim Objections

The following claims are objected to because of the following informalities:

1. **Claim 1, line 11:** "b. encoding the second data sequence into an analog signal". It is not common within the art to use the word 'encoding' for performing digital-to-analog process. It is better to replace 'encoding' with 'converting', which is also used in the specification.
2. **Claim 4, lines 4-5:** "a frequency matching a frequency the second clock signal" may be more grammatically correct if rephrased to "a frequency matching the frequency of the second clock signal". Appropriate correction is required.
3. **Claim 5, line 6:** the limitation "the fourth clock signal" which appears to be incorrect in view of the claim descriptions in claims 4 and 5. It should be corrected to "the third clock signal". Appropriate correction is required.

4. **Claim 11, lines 17:** the limitation "a first clock signal" appears to be referring to the same limitation as specified on line 2. It should be corrected to "the first clock signal".
5. **Claims 12-19** are also objected for the same reason as stated above in claim 11. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim recites the definition of a FIR filter, which includes the input weighted coefficients.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Long (6,560,276).

Long describes a method comprising:

a. receiving elements of a first data sequence (fig. 4, bitstream from the host) at a first rate ([1x] symbol rate sampling before the encoder and transmit engine) controlled by a first clock signal (inherent to first symbol rate sampling) and processing the first data sequence to generate elements of a second data sequence (fig. 4, Rsamples to the host) at a second rate (3x symbol rate) controlled by a second clock signal (inherent to the second rate sampling) wherein the second rate is higher than the first rate (col. 7, lines 7-8, "Symbols from the data encoder are up-sampled to 3x the symbol rate.")

and wherein the second data sequence is an encoded version of the first data sequence (fig. 4, via data encoder #400);

b. encoding the second data sequence (fig. 4, Rsamples to the host) into an analog signal (fig. 1, #170 and col. 4, digital-to analog conversion description in lines 49-55) and transmitting the analog signal via a communication channel (fig. 1, telephone line).

c. receiving and processing the analog signal transmitted by the communication channel (fig. 1, telephone line) to generate elements of a third data sequence (fig. 4, Rsamples from the host) at a third rate (3x symbol rate, as in col. 8, lines 3-4, "The receiver de-modulates the received samples to the base-band (still at 3x symbol rate).") controlled by a third clock signal (inherent to the third rate sampling);

d. processing the third data sequence (fig. 4, Rsamples from the host) to generate elements of a fourth data sequence (fig. 4, bitstream to the host) at a fourth

rate (inherent that the modem receiving side downsamples to the [1x] sampling rate, a reversed functionality at the transmitting side) controlled by a fourth clock (inherent to the fourth rate sampling), wherein the fourth rate is lower than the third rate (col. 8, lines 3-4, "The receiver de-modulates the received samples to the base-band (still at 3x symbol rate)".

Regarding claim 2, Long describes all limitations set forth in claim 1. Long further recites: col. 7, lines 26-26, "The receiver uses the Tx-Rx time difference computed by the sync recovery section (820) to match the receive sample time to the transmit sample time of the remote modem", where such synchronization scheme inherently infers that the local (second) and remote (third) clock signals are independently generated and are non-coherent.

Regarding claim 3, Long describes all limitations as set forth in claim 2. Long further describes:

e. deriving the first clock signal from the second clock signal (col. 7, lines 7-8, "Symbols from the data encoder are up-sampled to 3x the symbol rate", where it is interpreted that the internal clock which creates 3x symbol rate also derives the 1x symbol rate).

f. deriving the fourth clock signal (remote's final signals at 1x symbol rate) from the third clock signal (inherent from col. 8, lines 3-4, "The receiver de-modulates the received samples to the base-band [still at 3x symbol rate]").

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Long in view of Takano (5,768,281) and Agazzi (6,459,746).

Regarding claim 6, Long describes all limitations as set forth in claim 3.

Long lacks what Takano describes the substeps:

a1. [at the local transmitter], masking portions of the second clock signal to produce a fifth clock signal (col. 7, lines 61-65).

d1. [at the remote receiver], masking portions of the third clock signal to produce a fifth clock signal (col. 7, lines 61-65).

It would have been obvious to one in the ordinary skill of art at the time of invention to use clock masking to produce a scaled down input clock signal if needed for claim 1's filter. The motivation is that a clock mask may be simpler and more economical to design & implement than other means (e.g. using a separate oscillator) for producing a scaled down input clock.

Long and Takano lack what Agazzi describes:

a2. [at the local transmitter], shifting elements of the first data sequence (fig. 19, TXD) into a FIFO buffer (fig. 19, FIFO) at a first rate controlled by the first clock signal (fig. 19, GTX_CLK);

d3. [at the remote receiver], shifting elements of the fourth data sequence (fig. 19, output from RX #1922) into a second FIFO buffer (fig. 19, dotted FIFO) at a sixth rate controlled by the sixth clock signal (fig. 19, Rec. Clk or col. 58, line 65), and;

a3. [at the local transmitter], shifting elements of the first data sequence out of the first FIFO buffer (fig. 19, FIFO) at a fifth rate controlled by the fifth clock signal (col. 58, line 60, TCLK);

d4. [at the remote receiver], shifting elements of the fourth data sequence out of the second FIFO buffer (fig. 19, dotted FIFO) at a fourth rate controlled by the fourth clock signal (fig. 19, RX_CLK);

a4. [at the local transmitter], processing the first data sequence as it is shifted out of the first FIFO buffer to generate the elements of the second data sequence at the second rate controlled by the second clock signal (as described in claim 1);

d2. [at the remote receiver], processing the third data sequence to generate the elements of the fourth data sequence at the sixth rate controlled by the sixth clock signal (as described in claim 1);

It would have been obvious to one in the ordinary skill of art at the time of invention to add a FIFO buffer between the transceiver connection to the terminal device. The motivation being that data (Tx,a/Rx,a) which the upper (MAC) layer sent/received asynchronously to/from the transceiver are often times over/under run

and a FIFO is a well-known buffer design used between the transceiver and terminal device to minimize such over/under run (Agazzi, col. 58, lines 60-67 and col. 59, lines 1-2, "FIFO 1930 is needed for proper transfer of data TXD from MAC.. FIFO 1934 is needed to ensure proper transfer of data RXD 1927 from the receiver 1922 to the MAC.")

Regarding claim 7, Long, Takano and Agazzi combined describe all limitations as set forth in claim 6.

Long further describes:

a41. trellis code modulation encoding the first data sequence (Long, col. 6, lines 32-34) as it is shifted out of the FIFO buffer to generate elements of a fifth data sequence (fig. 4, via the data encoder #400, col. 6, lines 32-34).

a42. applying the fifth data sequence as input to a first (claim 1's local transmitter) filter clocked which interpolates elements of the fifth data sequence to produce elements of the second data sequence at said second rate (via the transmit engine's FIR filter, col. 7, lines 6-13).

d21. applying the third data sequence as input to a second filter which interpolates elements of the third data sequence to produce elements of a sixth data sequence at said third rate (via the receive engine's FIR filter, col. 8, lines 7-17).

d22. trellis code modulation encoding the sixth data sequence to generate elements of the fourth data sequence at the sixth rate (fig. 4, via the data decoder #430, col. 9, lines 41-42).

Regarding claim 8, Long, Takano and Agazzi combined describe all limitations as set forth in claim 7.

Per definition of FIR filter, the first/second FIR filter produces each element of the second/seventh data sequence as a weighted sum of a plurality of input element (fifth/third data sequence) with weighting controlled by values of first/second coefficients applied as input to the first/second filter (see p.3 of "Introduction to Digital Filters" webpage).

Allowable Subject Matter

5. Claims 4-5 and 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. Claims 11-19 are objected to in accordance to the claim objections above, but would be allowable if rewritten to overcome the claim objections.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Warner Wong whose telephone number is 571-272-8197. The examiner can normally be reached on 5:30AM - 2:00PM, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2668

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Warner Wong
Examiner
Art Unit 2668

WW

Chieh M. Fan

CHIEH M. FAN
PRIMARY EXAMINER